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Abstract of the national paper of Malaysia

1. In view of the immense benefits of space technology and its tremendous potential impact on all aspects of life, Malaysia is committed to the development and advancement of space science and technology applications.

I. The Earth and its environment

2. Utilization of Earth observation data in Malaysia dates back to the 1970s. To date the data have been used for planning, management and monitoring of natural resources and the environment. Other fields of application include land use, agriculture and meteorology. A ground receiving station that will receive real-time data directly from major international satellites is currently under construction.

3. Studies of the Earth's atmosphere have been carried out by several universities and government agencies. Of note is the work on the ozone layer and the regional haze caused by forest fires.

II. Satellite communication and global positioning

4. In 1996 Malaysia launched two telecommunication satellites, Measat-1 and 2, under the aegis of a private company. The design of Measat-3 is currently under way. Satellite communication is also provided by several other local companies through rental of transponders on or partial ownership of other international satellites.

5. The commercial utilization of the NAVSTAR Global Positioning System (GPS) is currently limited to a few transportation operations. Its use for mapping, scientific studies and recreation is rapidly on the rise. Global positioning represents the largest potential commercial utilization of space technology in Malaysia.

III. Small satellites

6. Malaysia has built its first microsatellite, TiungSAT-1, in collaboration with the United Kingdom of Great Britain and Northern Ireland. Named after a variety of a singing mynah bird, the satellite will operate on amateur radio frequencies and has remote sensing capability. It also carries a cosmic energy deposition experiment. The satellite awaits a piggyback launch in September 1999 aboard the Zenit-2 rocket. The launch has been much delayed owing to the unavailability of affordable launch opportunities for small satellites globally.

7. In view of the great potential for applications and the affordability of small satellites, Malaysia is committed to research on and development of such satellites and to exploiting its advantages in new ways. The design of a second microsatellite is now under way.

8. It should be mentioned that the scarcity of launch opportunities for small satellites will ultimately curb the usefulness of such satellites. Similarly, expensive launches will negate the affordability of small satellites and limit the number of countries that will develop and advance small satellite technology.

IV. Training and education

9. Space science is part of the formal science curriculum at both the primary and secondary school levels in Malaysia. Three tertiary institutions offer astronomy and astrophysics courses. The country has three planetariums, while one is in the planning stage. Aerospace engineering courses are offered by four tertiary institutions, three of which carry components related to space engineering. Scientists and engineers continue to be sent for training in space science and technology at overseas universities.

V. International and regional cooperation

10. Malaysia adopts an open policy of science and technology collaboration. In the field of satellite technology, cooperation has been forged with Brazil, India, the Republic of Korea, the Russian Federation, South Africa and the United Kingdom of Great Britain and Northern Ireland. Future programmes are expected to involve the United States of America, Australia, France, Germany, Italy, Japan, Singapore and some African countries.

11. Strong links have already been established with members of the Association of South-East Asian Nations in remote sensing in the aspects of training and development. Bilateral projects have been implemented with the European Space Agency/European Union, Canada, China, Japan and the United States.

12. International cooperation and joint ventures have been instituted by the country's satellite communication service providers. These international ventures include, among others, the International Telecommunications Satellite Organization, the International Mobile Satellite Organization, Iridium and ORBCOMM.

VI. Closing remarks

13. Aware of the fact that Malaysia is a new participant in the space arena and conscious of the limitations of its resources, Malaysia will actively seek international cooperation in all aspects of space activities while at the same time vigorously nurturing its own indigenous capability.